

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Fumitsugu FUKUYO et al.)	
)	
Application No.: 10/507,392)	Group Art Unit: Unassigned
)	
Filed: September 10, 2004)	Examiner: Unassigned
)	
For: LASER PROCESSING METHOD)	

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:


**SUBMISSION OF INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

A translation of an International Preliminary Examination Report ("IPER") issued in corresponding PCT/JP03/02945 is attached. Applicants respectfully request that the Examiner consider the IPER as it relates to the above-identified application.

Respectfully submitted,

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Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

PCT Application
PCT/JP2003/002945



Applicant's or agent's file reference FP03-0044-00	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP03/02945	International filing date (day/month/year) 12 March 2003 (12.03.03)	Priority date (day/month/year) 12 March 2002 (12.03.02)
International Patent Classification (IPC) or national classification and IPC B23K 26/38, H01L 21/301		
Applicant HAMAMATSU PHOTONICS K.K.		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of _____ sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input checked="" type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 12 March 2003 (12.03.03)	Date of completion of this report 08 September 2003 (08.09.2003)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP03/02945

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP03/02945

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations

Document 1: JP, 4-111800, A (Nippon Sekiei Glass Co., Ltd.), 13 April, 1992 (13.04.92), page 2, upper right column, line 16 to lower right column, line 7, Fig. 1 (Family: none)

Document 2: JP, 10-305420, A (Nippon Glass Co., Ltd.), 17 November, 1998 (17.11.98), the claims, detailed description of the invention, [0021]-[0024], Figs. 1 and 3 (Family: none)

Document 3: US, 5211805, A (Rangaswamy Srinivasan), 18 May, 1993 (18.05.93), column 1, lines 6-10 and 42-45, column 4, lines 60-68, column 8, line 59 to column 9, line 2, Figs. 1-4, & JP, 6-198475, A

Document 4: Status Quo of Femto-second Laser, and Its Application to Processing, (Katsuyoshi Midorikawa), Proceedings of the 45th Study Meeting on Laser Thermal Processing, December 1998, ISBN 4-947684-21-6, 3.4 Local Processing by Non-linear Effect, 5.4 Modification of Transparent Materials

Document 5: Evaluation of Silicon Processing Characteristics of Pico-second Pulse Laser – Precise Fine Processing of Electronic Materials by Short-pulse/Short-wavelength Laser (First Report), (Tomokazu Sano, et al.), Abstracts of Lectures at National Meeting of Japan Welding Society, 13 March, 2000 (13.03.00), 66th Collection, pages 72 and 73

Document 6: Photoinduced Structure Forming inside Glass by Femto-second Laser Irradiation, (Kiyotaka Miura and Kazuyuki Hirao), Proceedings of the 42nd Study Meeting on Laser Thermal Processing, November 1997, ISBN 4-947684-15-1, page 107, line 4 to page 109, line 5

Document 7: Internal Markings in Glass Substrate by Solid-state Laser Harmonics, (Kenichi Hayashi), Proceedings of the 45th Study Meeting on Laser Thermal Processing, October 1998, ISBN 4-947684-21-6

The subject matters of claims 1-10 appear to be novel and to involve an inventive step in view of documents 1-7 cited in the ISR.

Documents 1-7 do not describe a process whereby a cutting-start-point region is formed within a predetermined distance inward of the laser beam incident surface, along a planned cutting line in a work to be processed, by forming a modified area by means of multi-photon absorption. A person skilled in the art could not have easily conceived of the said process.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP03/02945

VI. Certain documents cited

1. Certain published documents (Rule 70.10)

<u>Application No. Patent No.</u>	<u>Publication date (day/month/year)</u>	<u>Filing date (day/month/year)</u>	<u>Priority date (valid claim) (day/month/year)</u>
WO 02/22301 A1 [E, X]	21.03.02	13.09.01	13.09.00

2. Non-written disclosures (Rule 70.9)

<u>Kind of non-written disclosure</u>	<u>Date of non-written disclosure (day/month/year)</u>	<u>Date of written disclosure referring to non-written disclosure (day/month/year)</u>